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10 **DOCUMENT DELIVERY SYSTEM FOR AUTOMATICALLY PRINTING A
DOCUMENT ON A PRINTING DEVICE**

Cross-Reference to Related Application

15 This application is a continuation-in-part of U.S. Serial No. 09/325,040, filed
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Field of the Invention

20 This invention relates to the printing field. More particularly, this invention is
a document delivery system for automatically printing a document on a printing
device.

Background of the Invention

25 In the mid 1400's, Johann Gutenberg revolutionized how information is
disseminated through his invention of the movable type press. With the publication of
the Mazarin Bible, documents which were once held in the exclusive domain of a
chosen few were now widely available to the masses. Nearly 550 years later, the
mass media revolution that Gutenberg started is alive and well, complete with
30 newspapers such as the New York Times and the Washington Post, magazines such as
Newsweek and Sports Illustrated, and literally thousands upon thousands of other
lesser known publications.

35 While these thousands of publications cover a wide range of interests, from
news to sports to fashion to model rocketry, they have one thing in common: they are
intended to be read by a mass market. Unlike the pre-Gutenberg days, where a
document would literally be read by only one person or a very small number of
people, it is not economically viable for today's publications to have such a small
readership, due at least in part to high marketing, production and distribution costs. In

fact, many of today's publications are funded to a very large extent by the advertising contained within them. These advertisers are attracted to publications that can consistently deliver a large, reliable audience of consumers that will be exposed to their advertising.

5 While this mass market publication model has worked well for hundreds of years, it is not without its problems. One such problem is that a typical reader of a publication has a wide variety of interests, and no single mass market publication will be able to satisfy all these interests. For example, a reader who is interested in international news, golf, fly fishing, Genealogy, and computers may have to subscribe
10 to several different publications to satisfy these interests. Of course, since these publications are intended for a mass market, they will also contain a significant amount of material that our reader is not interested in and will not read. It goes without saying that if there is a significant amount of material a reader isn't reading, there is a significant amount of advertising the reader isn't reading either – as well as a
15 significant amount of paper that is wasted. Advertisers know this, and agree to pay considerably less to a mass market magazine or newspaper per 1000 exposures to their ad than they would pay to a direct-mail generator that can provide a more specific guarantee that the people exposed to their ad are of a demographic group that will be much more likely to read their ad and be interested in it.

20 In addition, it is neither cost-effective nor time effective for most readers to subscribe to and/or read a large number of publications. Generally, the typical reader will only subscribe to a few publications that are of the most interest to them. The reduced readership level of the publications our typical reader chooses not to subscribe to, even though he would be interested in at least some of the editorial and
25 advertising content contained inside, means that the publication receives less subscription and advertising revenue than they otherwise would. If many other readers make the same decision, the continued health of the publication may be in jeopardy, and the publication may be forced to go out of business. In fact, many publications do go out of business yearly for failing to attract a sustaining number of
30 advertisers and readers – even if there are a large number of readers that would be interested in reading their publication, and a corresponding number of advertisers anxious to have these readers exposed to their ads. In general, publications that fail to

attract a substantial mass market of people willing to pay for and/or read them cease publication. This is a shame, since many of these publications would enrich the diversity of information available to all readers, and would provide an avenue for lesser known writers and artists to practice their wares.

5 In more recent years, a new type of publication has emerged: the electronic publication. Readers of these publications typically sign onto the Internet through their computer, and read the publications online. Some of these publications, such as CNN.com and pointcast.com, allow users to state personal preferences on what type of material they want to read. Often, these personalized electronic publications
10 include advertising, usually in the form of a banner ad that is placed on the top of the screen.

While these electronic publications have been an interesting development in the distribution of information, they still represent a tiny fraction of the information that is published under the more traditional post-Gutenberg model. Many readers of
15 these electronic publications complain that they are very difficult to read, especially for long periods of time. While it might be convenient for a reader to sign onto the Internet to look at the CNN.com web site for a brief summary of late breaking news, this reader would most likely only spend a few minutes at the site, and would likely still subscribe to the more traditional print media such as Newsweek or the
20 Washington Post. They would also likely spend significantly more time reading the more traditional printed publication than they would spend reading the electronic publication, and correspondingly, spend more time being exposed to the ads in the traditional printed publication. Accordingly, printed publications continue to flourish today – more than five centuries after Gutenberg made them possible.

25 While these printed publications have certainly benefited modern society, no significant attempt has been made thus far to solve the underlying problems with these publications discussed above.

Summary of the Invention

30 Printing a document on a printing device includes: storing a print schedule and automatically requesting, without user intervention, the document based on the print schedule. The document is transmitted to the printing device. A determination is

made whether the document has been received by the printing device and an assignment of a transient delivery time is made if the document has not been received by the printing device according to the print schedule, without user intervention and without effecting the print schedule. The document is automatically printed, without user intervention, on the printing device.

Description of the Drawings

Fig. 1 shows a block diagram of a document delivery system of one embodiment of the invention.

Fig. 2-4 show flowcharts detailing the operation of the transmission module and the printing module of the document delivery system of one embodiment of the invention.

Fig. 5 shows how user profile information is acquired from a user in one embodiment of the invention.

Fig. 6 shows how user profile information is acquired from a user in one embodiment of the invention.

Fig. 7 shows a print schedule for the delivery of documents in one embodiment of the invention.

Fig. 8 shows how the print schedule of Fig. 7 can be modified by the user.

Figs. 9A-9B shows a document printed by the printing device according to one embodiment of the invention.

Fig. 10 shows a document printed by the printing device according to one embodiment of the invention.

Figs. 11A-11D shows a document printed by the printing device according to one embodiment of the invention.

Fig. 12 shows a document printed by the printing device according to one embodiment of the invention.

Fig. 13 shows a flowchart detailing the operation of one embodiment of the document delivery system of the present invention.

Detailed Description of the Embodiments

Fig. 1 shows a block diagram of a document delivery system of one embodiment of the invention. Document delivery system 10 contains document server 100. In the preferred embodiment, document server 100 is operatively coupled via network 200 to a variety of personal computers, printing devices, and other electronic devices, collectively referred to as devices 300. Document server 100 contains edit module 120, transmission module 150, and knowledge module 170. Edit module 120 receives inputs from one or more content providers 50, and/or one or more advertising providers 80. Distribution module 400 is operatively coupled to document server 100. In the preferred embodiment, document server 100 is a minicomputer/server, such as an HP 9000 server sold by the Hewlett-Packard Company, although those skilled in the art will appreciate that document server 100 could be any type of other computing or electronic device(s) that performs the functions described herein and still fall within the spirit and scope of the invention. Device 300 and/or server 100 can include a personal computer (PC), but each can also include a network of PC's, workstations, or other programmable processor or array thereof. Network 200 is preferably the Internet, although an Intranet, local area network, or other type of public or private network, either wired (e.g., telephone, cable TV, etc) or wireless (e.g., satellite, radio, cell phone, etc), could also or additionally be used.

Devices 300 are shown in Fig. 1 as being capable of being configured in a wide variety of ways. For example, personal computer 310 is shown connected to printing device 320, which prints document 10320 for user 20320. Personal computer 310 is operatively coupled to network 200. In contrast, printing device 330, which prints document 10330 for user 20330, is operatively coupled to network 200 without an intervening personal computer or other electronic device. Printing device 350, which prints document 10350 for user 20350, is shown connected to electronic device 340, which could be a set top box, television set, palmtop PDA or other type of electronic device that is operatively coupled to network 200. Finally, printing device 370, which prints document 10370 for user 20370, is connected to electronic device 360, which is operatively connected to network 200. The printing devices shown in Fig. 1 could be printers, such as the HP DeskJet 890 printer, HP LaserJet V printer, or

other models of printers manufactured by HP or others; so-called “copiers” or other multi-function printing devices that can print, fax, scan, and/or copy, or any other device capable of transferring information to a printable media such as plain paper, specialty paper, transparencies, or other media capable of tangibly receiving such information and which can be easily carried about by the user.

Fig. 2-4 show flowcharts detailing the operation of transmission module 150 and printing module 380 of one embodiment of the invention. In Figs. 2-4, the flow diagram shown in the left column is executed by transmission module 150 of document server 100, and the flow diagram in the right column is executed by printing module 380. As Fig. 1 shows, printing module 380 could be located in any of the devices 300, such as in personal computer 310, printing device 330, or electronic device 340, operatively coupled via network 200 to document server 100, or it could be located within document server 100 itself, such as in knowledge module 170. Preferably, transmission module 150 and printing module 380 represents software that executes on suitably programmed microprocessor(s) within a device 300 and/or document server 100, although those skilled in the art will appreciate that special purpose hardware or other mechanisms could be employed to execute the flowcharts shown in Figs. 2-4.

Referring now to Fig. 2, the flow diagram for transmission module 150 starts in block 1000, and the flow diagram for printing module 380 starts in block 2000. Since there is a great deal of interaction between these two flow diagrams, as represented by dashed lines connecting the two columns, the operation of the two flow diagrams will be described simultaneously.

In block 2100, user profile data is sent to document server 100 to be stored in the user profile. This user profile data can take on many different forms, from simple to very detailed. Fig. 5 shows a very simple acquisition of user profile data, such as that used in HP's Instant Delivery Program, the first version of which was generally available to the public less than one year from the filing date of this patent application. In this program, only three pieces of information are stored in the user profile: type of printer, email address, and whether HP can contact the user or not. Fig. 6 shows a more complicated user profile than that currently used in HP's Instant Delivery Program, which includes the user's name, email address, company name,

city, state, country, zip or postal code, phone number, printer information, and areas of interest. Those skilled in the art will appreciate that more or less user profile data from those shown in Figs. 5 and 6 could be sent to transmission module 150 in block 2100 and still fall within the spirit and scope of the invention, and that at least some of this information could come from a source other than the user. For example, the user profile data could also include household income, age, and sex of the user, among other things. In any event, block 1100 receives the user profile data sent by block 2100. Block 1200 stores the user profile data, preferably in knowledge module 170. Alternately, the user profile data could be stored in device 300 or in some other local or remote location.

Block 2200 checks to see whether a document should be received from document server 100. This is done by checking print schedule 390 which is preferably stored on a device 300 or document server 100, but may be stored in some other local or remote location. Printing schedule 390 preferably contains information that can be used to determine when documents should be printed by the printing device, such as upon document creation, user requested time, lapse of specified time period, and/or occurrence of one or more external events (e.g., a stock price or index reaching a specified value, a final score of a sporting event, etc). Printing schedule 390 may be associated with an individual user, a device, or a group or users and/or devices. In addition, each entry of printing schedule 390 could result in the printing of one or more documents.

Fig. 7 shows one example of printing schedule 390, of the type that might be used in an enhanced version of HP's Instant Delivery Program. In this example, the title of delivery, delivery schedule, next delivery date and time, and last delivery status are shown. Preferably, the user can select what time a document should be printed, whether it should be printed on a specific day of the week or month, weekdays, or weekends, and whether the printing schedule should expire after a specific period of time or continue indefinitely.

Referring again to Fig. 2, printing module 380 monitors printing schedule 390 to see if a document should be requested from document server 100 or from another source. When block 2200 determines that a document should be requested from document server 100 or from another source, block 2200 is answered affirmatively,

and block 2300 automatically requests the document without user intervention from server 100 or from another source, as will be described in more detail later. Note that if printing module 380 is located on device 300, block 2200 operates in a “pull” mode – where the document is “pulled” from document server 100 or another source to device 300. However, if printing module 380 is located remotely from device 300, such as in document server 100, block 2200 operates in a “push” mode – where the document is “pushed” from document server 100 or another source to device 300. If block 2300 determines that the document is located on document server or at another source accessible via network 200, and if device 300 is currently in a disconnected state where it is not operatively coupled to the network, block 2300 will sign on to or otherwise enter a connected state with network 200, so that device 300 is operatively coupled to network 200. Meanwhile, block 1300 checks to see if a document has been requested from printing module 380 in block 2300. Once it determines that such a document has been requested, block 1400 generates the document for printing module 380. Block 1500 then sends the document to printing module 380. Block 2400 checks to see whether a document has been received from document server 100 via block 1500. Once such a document has been received, block 2500 automatically prints the document, without user intervention, on a printing device. The term “without user intervention” means that a user is not directly involved in the printing operation; the document is sent automatically to a device 300 to be printed out by a printing device. The user does not press any “print” buttons or otherwise be directly involved in the printing process; in fact, the user may not even be present in the same room, city, state, or country as device 300 during the printing operation. The printing operation automatically occurs in an unattended state – regardless of whether the user is present or not. In addition, if print schedule 390 is stored in a device-independent manner, such as on document server 100, a travelling user could “log in” to document server 100 and have his or her customized document sent to a device 300 that is convenient to the user’s current location.

Referring now to Fig. 3, block 2600 checks to see whether the document printed successfully. If not, block 2800 performs error handling, such as attempting to print the document again, notifying the user that the printing device is out of paper or has some other error condition, or simply deciding not to print the document.

When the document prints successfully, block 2900 informs document server 100 that the document printed successfully. Block 1600 waits for an indication from printing module 380 that the document did print successfully. When such an indication is received, block 1700 updates the user profile with this information.

5 The latest publicly released version of HP's Instant Delivery Program as of the filing date of this application (1.2.1) does not execute some of the blocks shown in Fig 3. Specifically, blocks 2900 and 1600-1900 are not executed by this version or any previously publicly released versions of Instant Delivery. Instead, in this embodiment, flow of control moves from block 2600 to block 4100 of Fig. 4, as will
10 be discussed later, and from block 1500 back to block 1300 of Fig. 2.

 An alternate embodiment has been contemplated where other information is transmitted back to document server 100 in block 2900 to update the user profile preferably stored in knowledge module 170. This other information could be ink usage (total usage or usage broken out by ink color), printable media usage (number
15 of pages printed, type of media used, etc), or other types of information. In addition, another alternate embodiment has been contemplated where some or all of the information contained in the user profile stored in knowledge module 170 came from a source other than the user via printing module 380. For example, publicly or privately available information about the user, and/or the devices 300 he/she/they use,
20 could be acquired from a wide variety of different sources and inserted into the user profile preferably stored in knowledge module 170.

 Block 1800 examines the user profile preferably stored in knowledge module 170 to determine whether a product subsidy should be provided to the user. For example, if the information in the user profile indicates that this user has printed off
25 his 1000th document, such as a "preferred" document that contains advertising from advertising providers 80 or is otherwise under the control of edit module 120, providing a product subsidy to the user may be warranted. For purposes of this invention, a "product" could be a print consumable or other product. A "print consumable" is an inkjet cartridge for an inkjet printer, ink for such an inkjet
30 cartridge, a toner cartridge for a laser printer, toner for such a toner cartridge, or any other product or substance that is depleted when a document gets printed, including printer ribbons, etc. Note that the "ink" referred to above would typically be of a

permanent variety, but erasable ink, such as that sold by the E Ink Company, could also be used.

Note that the product subsidy referred to herein is preferably funded at least in part by advertising revenue received from advertising providers 80 (Fig. 1), but an embodiment has been contemplated where the product subsidy is funded at least in part from distribution revenue received from content providers 50 (Fig. 1). In either case, information (such as statistical information) about what was printed by whom is preferably provided to content providers 50 and/or advertising providers 80 – preferably as a document that is automatically sent to one or more printing devices according to the teachings of this invention.

Other forms of products that are contemplated to be subsidized by this invention include printable media, such as plain paper, specialty paper, transparencies, and the like, and may also include devices 300 such as printing devices, electronic devices, and personal computers. In fact, alternate embodiments have been contemplated where other products, such as a subscription price to a document, or even a product not directly related to the document delivery system shown herein, such as soap or dog food, are subsidized. If block 1800 determines that such a subsidy is warranted, block 1900 requests that distribution module 400 provides such a subsidy to the user. In one embodiment, distribution module 400 simply mails a product such as a print consumable or other product such as the type described above to a user at the address specified in the user profile. In another embodiment, distribution module 400 mails or electronically generates a coupon that the user can use to receive a free or discounted product of the type described above. Regardless of whether block 1800 is answered affirmatively or negatively, flow of control then returns back to block 1300 (Fig. 2) to see if another document has been requested from the printing module.

Referring again to Fig. 3, after block 2900 informs document server 100 that the document printed successfully, flow of control moves to block 4100 (Fig. 4), which checks with document server 100 to see what the current version of printing module 380 is. Block 3100 checks to see whether such a request has been received, and when it is, block 3200 sends information concerning the current version of the printing module to printing module 380. Block 4200 compares this information from

document server 100 with its own version and determines whether an updated version of printing module 380 is available. For example, if printing module 380 is running version 4.0, and document server 100 indicates that version 4.1 is the current version of printing module 380, block 4200 would determine that an updated version of printing module 380 is available, and flow of control would move to block 4300. Block 4300 checks to seeing whether this updated version of printing module 380 should be requested to be downloaded. While a user would typically be asked whether such a download should be requested or not, and would typically perform this download at a convenient time, such a step could also be performed automatically without user intervention. If such a download is requested, block 4400 requests the download. Once such a download has been requested, block 3400 is answered affirmatively, and block 3500 downloads the updated printing module, which is then installed in block 4500. Regardless of how blocks 4200 and 4300 are answered, flow of control moves to block 4600, which checks to see if a disconnected state should be entered. If block 2300 (Fig. 2) determined that device 300 was in a disconnected state when the document was requested, as discussed above (i.e., not operatively coupled to network 200), block 4600 is answered affirmatively, and block 4700 reenters the disconnected state. In any event, flow of control returns to block 2200 of Fig. 2.

Referring again to print schedule 390 shown in Fig. 7, it can be seen that many different types of documents can be requested to be printed. For example, the title of document 11000 specifies a network address, such as an Internet uniform resource locator (URL) that contains the network location of a document to be printed. Note that this URL may be partially or completely hidden from the user, as is the case with the URL for document 15000 (<http://www.beloitdailynews.com>). In this scenario, edit module 120 of document server 100 merely goes out to the Internet at the URL indicated (which would be shown in Fig. 1 as one of the content providers 50), and captures the indicated document, which is then transmitted to a printing device via transmission module 150 and printing module 380, as has been discussed. Alternatively, device 300 could go directly out to the URL itself without assistance from document server 100; in this case, block 2300 (Fig. 2) requests document 11000 from another source -- directly from the content provider 50 (at the indicated URL)

via network 200. This alternate embodiment is used by the current version of HP's Instant Delivery Program.

In contrast, document 12000 is not a document that originates with a content provider 50 via the Internet, but instead is stored directly on device 300, such as a printing device, personal computer, or other electronic device. An example of such a document could be a daily calendar from a program such as Microsoft Outlook, which the user has requested be printed automatically to his printer, without any user intervention, at 7:00 a.m. every weekday morning. In such an embodiment, printing module 380 does not need to request the document from document server 100, since it can access the documents without going through network 200. In this embodiment, block 2300 of Fig. 2 requests the document from another source -- device 300. While block 2900 would still preferably indicate that the document was printed, and while block 1700 would still preferably update the user profile in knowledge module 170, printing such a document would preferably not generate any type of credit towards a product subsidy, since such a document would not be considered a "preferred" document; e.g., not a document under the control of edit module 120.

Referring again to Fig. 7, a print schedule of document 13000 is shown. Document 13000 is referred to as a "personalized document". A "personalized document" is a document that is assembled by edit module 120 of document server 100 from a variety of content providers 50 and advertising providers 80, based on information contained in the user profile stored in knowledge module 170. For example, document 13000 is a "personalized document". Our user has requested that document 13000 -- his personalized newspaper -- be printed at 6 a.m. every day. Edit module 120 examines the user's interests as specified in the user profile stored in knowledge module 170 to assemble the document from selected content providers 50 in which the user has indicated an interest. Edit module 120 also inserts advertising from selected advertising providers 80--again based on the user profile stored in knowledge module 170.

Fig. 8 shows how the print schedule 390 of Fig. 7 can be edited by the user. The user can use the publisher's recommended schedule, use a default schedule the user has set, or use a custom schedule for delivery. If a custom schedule is selected, the user can select a daily, weekly, or monthly delivery, or select a delivery once

every specified number of days, or specify every weekday. In addition, the time of day can also be specified: once at a designated time, multiple times during the day, or multiple times separated by a specified period of time. While not shown here, the user could also edit print schedule 390 to request that a document be sent upon creation, or upon the occurrence of an external event.

Figs. 9A-B show document 11000 printed by the printing device according to one embodiment of the invention. Note that this document came from one content provider 50 via network 200 (either through document server 100 or directly), and contains no advertising. While document 11000 is preferably formatted by content provider 50 such that the information contained in the document is optimized to be printed, such formatting is not necessary.

Fig.10 shows document 12000 printed by the printing device according to one embodiment of the invention. Note that this document is a user's daily calendar which came directly from device 300 and not from document server 100 via network 200.

Figs. 11A-D show document 13000 printed by the printing device according to one embodiment of the invention. Note that this document is a user's personalized newspaper which contains information in which the user has indicated a specific interest in, as stored in the user profile in knowledge module 170. Note also that this document contains advertising that edit module 120 determined the user would also be interested in, again based on the information contained in the user profile stored in knowledge module 170. As has already been discussed, when the user prints a sufficient number of such "preferred" documents, the user may receive a subsidy of a print consumable or other product(s).

Fig. 12 shows document 14000 printed by the printing device according to one embodiment of the invention. Note that document 14000 is the HP Instant Delivery Times – a document located on document server 100. While this document does not contain advertising per se, it is still considered to be a "preferred document", since it is under the control of edit module 120. Document 14000 informs users of Instant Delivery of new releases or new information about the Instant Delivery Program.

Another embodiment of the invention provides a document delivery system that is capable of being operatively coupled to a printing device and which prints a

document on a printing device by: storing a print schedule; automatically requesting, without user intervention, the document based on the print schedule; transmitting the document to the printing device; determining whether the document has been received by the printing device, without user intervention; assigning a transient delivery time if the document has not been received by the printing device according to the print schedule, without user intervention and without effecting the print schedule; and automatically printing, without user intervention, the document on the printing device. Thus, another aspect of the invention is to provide a client-server solution to ensure that a requested document is delivered and printed for instances when the requested document cannot be published at the time of normal scheduled delivery. This aspect is particularly useful when the server is experiencing peak load(s) or if some document components are not available at the time of the normal scheduled delivery. This aspect of the invention is accomplished by a server that returns to the client computer a file that contains job information that client computer can automatically parse and act upon without user intervention, such as scheduling a transient delivery time at a specified time and then attempting to fetch the requested document from the server at that future specified time. In accordance with a further aspect of the invention, the server smoothes out peak loads by specifying job information, including a transient delivery time, and then provides that job information to the client computer. These aspects of the invention ensure document delivery without degrading perceived performance of the client computer or the server, or their software. Prior to these aspects of the present invention, documents that are prepared on-demand by a server in response to a request from a client computer but cannot be published for some reason, such as excessive peak load(s) are neglected and forgotten by both the client computer and server, and the documents are not printed by the printer operatively connected to the client computer.

More specifically, Fig. 13 shows a flowchart detailing the operation (or the steps) of one embodiment of the method performed by the document delivery system of the present invention. More specifically, Fig. 13 details the operation of the preferred embodiment of transmission module 150 and printing module 380 (shown in Figure 1) of one embodiment of the invention. The steps shown in the flow diagram shown in the left column are preferably executed by transmission module

150 of document server 100, and the steps shown in the flow diagram in the right column is executed by printing module 380, as shown in Figure 1. The prior discussion relating to the earlier figures and embodiments are hereinafter incorporated by reference.

5 Referring now to Fig. 13, the flow diagram for the transmission module 150 starts in block 5000, and the flow diagram for printing module 380 starts in block 6000. Since there is a great deal of interaction between these two flow diagrams, as represented by the dashed lines connecting the two columns, the operation of the two flow diagrams will be described simultaneously.

10 The embodiment of Figure 13 can be incorporated into the embodiment depicted in Figure 2 as follows: server blocks 5000 through 5300 in Figure 13 can comprise block 1400 in Figure 2; client block 6000 in Figure 13 precedes entry to block 2300 in Figure 2; client block 6100 in Figure 13 can be the same as block 2300 in Figure 2; client block 6300 in Figure 13 can be the same as block 2400 in Figure 2; client block 6400 can be the same as block 2500 in Figure 2; client block 6500 can be termination state B in Figure 2; and client blocks 6200, 6600, and 6700 can be incorporated into the embodiment of Figure 2 in the same position relative to blocks 6000, 6100, 6300, 6400, and 6500 when those blocks are incorporated into Figure 2 as noted above.

20 Block 6100 receives from block 6000 information about the requested publication. In block 6100, information about the requested document is sent document server 100 to be processed in block 5000. Block 5100 checks to see whether a delay is needed before the requested document is generated and transmitted to block 6200. This is done by checking the load of server 100 and whether all components of the requested document are available. Printing schedule 390, previously described, is the normal printing schedule for the requested document.

25 When it is determined in block 5100 that no delay is needed and the requested document can be sent to the printing module 380, block 5100 is answered negatively, and block 5200 automatically generates the document, which then automatically transmit the document to block 6200. When it is determined in block 5100 that a delay is needed and the requested document cannot yet be sent to the printing module 380, block 5100 is answered affirmatively, and block 5300 automatically assigns a

new time for the delivery. As this new time is a single new time that is different from the normal delivery or printing schedule, it can be referred to as a transient delivery time. Block 5300 then provides the new time for the delivery to block 6200. Block 6200 processes the request results from blocks 5200 or 5300. While block 5300 is shown on the server side in Figure 13, block 5300 can alternatively be located on the client side and/or incorporated into block 6600.

In block 6300, it is then determined whether the requested document has been received. When it is determined in block 6300 that the document has been received, block 6300 is answered affirmatively, and the document is delivered in block 6400. In block 6500, the document is printed and the task is complete.

When it is determined in block 6300 that the document has not been received, block 6300 is answered negatively, and the delivery of the document is rescheduled in block 6600. The rescheduled delivery time can be the same as or about the same time as the assigned time determined in block 5300. It is then determined in block 6700 whether it is time to re-try the delivery. When it is determined in block 6700 that it is time to re-try the delivery, block 6700 is answered affirmatively, and the publication is requested again in block 6000. If it is determined in block 6700 that it is not time to re-try the delivery, block 6700 is answered negatively, and the determination is repeated within block 6700 until this question is answered affirmatively.

As previously noted, the printing operation automatically occurs in an unattended state – regardless of whether the user is present or not.

Many modifications and variations may be made in the techniques and embodiments described and illustrated herein without departing from the spirit and scope of the present invention. Accordingly, the techniques and embodiments described and illustrated herein should be understood to be illustrative only and not limiting upon the scope of the present invention.

What is claimed is: